After entry of this amendment, claims 1-23 are pending.

In the Claims:

Please replace claims 1-4, 6-9, 11, 13, 16-17 with the following:

1. (Amended) An atrial defibrillator, comprising:

a portable, non-implantable housing;

a pair of defibrillator pads operable to be applied to the outside of a patient's body;

a shock generator disposed in the housing, coupled to the pads, and operable to shock the patient via the pads in response to a shock command from an operator; and

an analyzer disposed in the housing and operable to receive a cardiac signal from the patient, to determine from the signal whether the patient is experiencing atrial fibrillation, and to enable the shock generator if the patient is experiencing atrial fibrillation.

2. (Amended) The atrial defibrillator of claim 1, further comprising a control device disposed in the housing, coupled to the shock generator, and operable to receive the shock command from the operator and to activate the shock generator in response to the shock command.

3. (Amended) An atrial defibrillator, comprising:

a portable, non-implantable housing;

a pair of defibrillator pads operable to be applied to the outside of a patient's body;

a shock generator disposed in the housing, coupled to the pads,

and operable to shock the patient via the pads;

an analyzer disposed in the housing and operable to receive a cardiac signal from the patient, to determine from the signal whether the patient is experiencing atrial fibrillation, and to enable the shock generator if the patient is experiencing atrial fibrillation; and

a safety device disposed in the housing and operable to prevent the patient from activating the shock generator.

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4. (Amended) An atrial defibrillator, comprising:

a portable, non-implantable housing;

a pair of defibrillator pads operable to be applied to the outside of a patient's body;

a shock generator disposed in the housing, coupled to the pads, and operable to shock the patient via the pads;

an analyzer disposed in the housing and operable to receive a cardiac signal from the patient, to determine from the signal whether the patient is experiencing atrial fibrillation, and to enable the shock generator if the patient is experiencing atrial fibrillation; and

a verification device disposed in the housing and operable to prevent an unauthorized person from activating the shock generator.

6. (Amended) An atrial defibrillator, comprising:

a portable, non-implantable housing;

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a pair of defibrillator pads operable to be applied to the outside of a patient's body;

a shock generator disposed in the housing, coupled to the pads, and operable to shock the patient via the pads;

an analyzer disposed in the housing and operable to receive a

cardiac signal from the patient, to determine from the signal whether the patient is experiencing atrial fibrillation, and to enable the shock generator if the patient is experiencing atrial fibrillation;

wherein the cardiac signal comprises an electrocardiogram having R-R intervals; and

the analyzer is operable to determine whether the patient is experiencing atrial fibrillation by;

measuring the durations of the R-R intervals,

calculating the respective differences between the lengths of contiguous ones of the R-R intervals,

comparing the calculated differences to a difference threshold, and

determining that the patient is experiencing atrial fibrillation if one of the calculated differences exceeds the threshold.

7. (Amended) An atrial defibrillator, comprising:

a portable, non-implantable housing;

a pair of defibrillator pads operable to be applied to the outside of a patient's body;

a shock generator disposed in the housing, coupled to the pads, and operable to shock the patient via the pads;

an analyzer disposed in the housing and operable to receive a cardiac signal from the patient, to determine from the signal whether the patient is experiencing atrial fibrillation, and to enable the shock generator if the patient is experiencing atrial fibrillation;

wherein the cardiac signal comprises an electrocardiogram having R-R intervals; and

wherein the analyzer is operable to determine whether the patient

is experiencing atrial fibrillation by;

measuring the durations of a first group of the R-R intervals,

calculating the respective differences between the durations of contiguous ones of the R-R intervals in the first group,

comparing the calculated differences to a difference threshold,

repeating the measuring, calculating, and comparing for a second group of the R-R intervals, and

determining that the patient is experiencing atrial fibrillation if one of the first-group differences and one of the second-group differences exceed the threshold.

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8. (Amended) An atrial defibrillator, comprising:

a portable, non-implantable housing;

a pair of defibrillator pads operable to be applied to the outside of a patient's body;

a shock generator disposed in the housing, coupled to the pads, and operable to shock the patient via the pads;

an analyzer disposed in the housing and operable to receive a cardiac signal from the patient, to determine from the signal whether the patient is experiencing atrial fibrillation, and to enable the shock generator if the patient is experiencing atrial fibrillation;

a memory coupled to the analyzer and operable to store a normal QRS signal of the patient;

wherein the cardiac signal comprises an electrocardiogram having QRS signals and R-R intervals; and

wherein the analyzer is operable to determine whether the patient is experiencing atrial fibrillation by;

measuring the durations of the R-R intervals,

calculating respective R-R differences between the lengths of contiguous ones of the R-R intervals,

comparing the calculated R-R differences to an R-R threshold,

calculating a QRS difference between one of the QRS signals of the cardiac signal and the stored QRS signal,

comparing the calculated QRS difference to a QRS threshold, and

determining that the patient is experiencing atrial fibrillation if one of the R-R differences equals or exceeds the R-R threshold and the QRS difference is less than the QRS threshold.

9. (Amended) An atrial defibrillator, comprising:

a portable, non-implantable housing;

a pair of defibrillator pads operable to be applied to the outside of a patient's body;

a shock generator disposed in the housing, coupled to the pads, and operable to shock the patient via the pads; and

an analyzer disposed in the housing and operable to receive a cardiac signal from the patient, to determine from the signal whether the patient is experiencing atrial fibrillation, and to enable the shock generator if the patient is experiencing atrial fibrillation;

wherein the cardiac signal comprises an electrocardiogram having R-R intervals; and

wherein the analyzer is operable to determine whether the patient is experiencing atrial fibrillation by;

measuring the durations of the R-R intervals,

calculating respective differences between the lengths of contiguous ones of the R-R intervals,

comparing the calculated differences to a difference threshold,

determining the patient's heart rate,

determining whether the patient's heart rate is within a predetermined range of heart rates, and

determining that the patient is experiencing atrial fibrillation if one of the differences exceeds the threshold and the heart rate is within the predetermined range.

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11. (Amended) An atrial defibrillator, comprising:

a portable, non-implantable housing;

a pair of defibrillator pads operable to be applied to the outside of a patient's body;

a shock generator disposed in the housing, coupled to the pads, and operable to shock the patient via the pads;

an analyzer disposed in the housing and operable to receive a cardiac signal from the patient, to determine from the signal whether the patient is experiencing atrial fibrillation, and to enable the shock generator if the patient is experiencing atrial fibrillation

wherein the cardiac signal comprises an electrocardiogram having R-R intervals; and

wherein the analyzer is further operable to determine from the cardiac signal whether the atrial fibrillation terminates after the shock generator shocks the patient by;

measuring the lengths of the R-R intervals,

calculating respective differences between the lengths of

contiguous ones of the R-R intervals,

comparing the calculated differences to a difference threshold, and

determining that the atrial fibrillation is terminated if one of the calculated differences is less than the difference threshold.

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13. (Amended) A method, comprising:

receiving a cardiac signal from a patient;

determining from the signal whether the patient is experiencing atrial fibrillation;

receiving a shock command from an operator; and

shocking the patient with a portable shock generator in response to the shock command if the patient is experiencing atrial fibrillation.

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16. (Amended) A method, comprising:

receiving a cardiac signal from a patient;

determining from the signal whether the patient is experiencing atrial fibrillation;

shocking the patient with a portable shock generator if the patient is experiencing atrial fibrillation;

storing a normal QRS signal of the patient; and

wherein the determining comprises;

measuring the lengths of R-R intervals of the cardiac signal,

calculating the respective differences between the lengths of contiguous ones of the R-R intervals,

comparing the calculated differences to an R-R threshold,

calculating a difference between a QRS signal of the cardiac signal and the stored QRS signal,

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comparing the calculated QRS difference to a QRS threshold, and

determining that the patient is not in atrial fibrillation if one of the calculated differences is less than the R-R threshold or if the QRS difference is greater than or equal to the QRS threshold.

17. (Amended) A method, comprising:

receiving a cardiac signal from a patient;

determining from the signal whether the patient is experiencing atrial fibrillation;

shocking the patient with a portable shock generator if the patient is experiencing atrial fibrillation; and

wherein the determining comprises,

determining the patient's heart rate, and

determining that the patient is not in atrial fibrillation if the heart rate is outside of a predetermined range.

Please add the following new claims:

22. The method of claim 20 wherein the patient is the operator.

23. An atrial defibrillator, comprising:

a portable, non-implantable housing;

a pair of defibrillator pads operable to be applied to the outside of a patient's body;

a shock generator disposed in the housing, coupled to the pads, and operable to shock the patient via the pads with a multi-phasic waveform; and

an analyzer disposed in the housing and operable to receive a